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10/785,176

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Kun-Hong Chen

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24504

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EXAMINER

NADAV, ORI

ART UNIT

PAPER NUMBER

2811

MAIL DATE

DELIVERY MODE

07/06/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/785,176

Applicant(s)

CHEN, KUN-HONG

Examiner

Ori Nadav

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9, 10, 12-17 and 20 is/are pending in the application.
- 4a) Of the above claim(s) 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9, 10 and 12-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION***Election/Restrictions***

Applicant's election with traverse of the embodiment of figures 2 and of claims 9-10 and 12-13 in the reply filed on 5/3/2007 is acknowledged. The traversal is on the ground(s) that "there is absolutely no discussion in the Office Action as to why the different embodiments allegedly constitute distinct species" and there is no undue burden on the examiner to examine both embodiments because "According to the PTO's PAIR system, the Examiner performed an initial search of this application on March 9, 2005, and an updated search was performed on March 24, 2006. Additional search strategies and notes were recorded by the Examiner on July 29, 2006 and August 3, 2006" and "multiple Office Action have been mailed and responded to (indeed, an RCE has already been filed in this application)".

This is not found persuasive because different embodiments, which comprise different and distinct structures, do constitute distinct species and do create undue burden on the examiner. Although the examiner performed an updated search on March 24, 2006, and additional search strategies and notes were recorded by the Examiner on July 29, 2006 and August 3, 2006 and multiple Office Action have been mailed and responded to, (note that the examiner did not perform an initial search of this application on March 9, 2005), the search was directed to the structure of only one embodiment. Only on 2/23/2007 applicant introduced a claim (claim 20), which was directed towards a distinct and different embodiment. Therefore, a restriction requirement was required.

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Furthermore, the examiner disagrees that claim 14 is directed to the embodiment of figure 3 (as noted by applicant), and respectfully requests applicant to point out which element in the claim does not read on the embodiment of figures 2.

The requirement is still deemed proper and is therefore made FINAL.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. The claims recite plugs being separate and distinct element from the second metal line. Therefore, the plugs must be shown as separate elements from the second metal line or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New

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Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities: The amendment to the specification for pages 6 and 8, which was filed on 11/1/2006 is inconsistent with the structures depicted in the drawings. For example, the passage "The upper metal line 250, having a first end 221" is inconsistent with figure 2C which depicts a lower metal line 230, having a first end 221.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 9-10 and 12-17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no support in the

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specification for a first metal line, having a first and second end, wherein the direction extending from the first end to the second end is parallel to the substrate surface, and wherein a plurality of conductive plugs arranged along the first metal line and disposed on the first end of the first metal line, as recited in claims 9, 13 and 14.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9-10 and 12-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claimed limitation of a plurality of conductive plugs electrically connect the second metal line, as recited in claims 9, 13, 14 and 17, is unclear as to which element the plurality of conductive plugs electrically connect the second metal line.

The claimed limitation of a first metal line, as recited in claim 9, is unclear as to the structural relationship between the first metal line and the interconnect structure.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9-10 and 12-17, as best understood, rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. (7,030,952).

Regarding claims 9 and 14, Chang et al. teach in figure 8 and related text an interconnect structure, comprising:

- a substrate 202 (see figure 14) having a surface;

- a dielectric layer 218 disposed on the surface of the substrate;

- a first conductive line 214 disposed in the dielectric layer 218, having a first and second end, wherein the direction extending from the first end to the second end is parallel to the substrate surface;

- a second metal line 224 or 242 disposed on the dielectric layer, wherein the second metal line is separated from the first metal layer by the dielectric layer; and

- a plurality of conductive plugs a' (see figure 8) arranged along, that is, in a line parallel with the length or direction of, the first conductive line 214, disposed in the dielectric layer and on the first end of the first conductive line to electrically connect the second metal line, wherein the first conductive line and the second metal line are a gate layer and a source/drain metal layer of a TFT array, respectively.

Chang et al. do not state that the gate comprises metal.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a gate comprising metal in Chang et al.'s device in order to reduce the contact resistance of the device by using conventional material, of which official notice is taken.

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Regarding claims 12 and 16, Chang et al. teach in figure 8 the number of conductive plugs is 2 and from 2 to 5.

Regarding claims 13 and 17, Chang et al. teach in figures 8 and 14 and related text the conductive plugs disposed on the first end of the first metal layer electrically connect one end of the second metal layer.

Regarding claims 10 and 15, Chang et al. do not teach using the device for an LCD panel. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Chang et al.'s device for an LCD panel, in order to improve the property and the reliability of the liquid crystal display (LCD) panel, when using the device in an application which requires an LCD panel.

Response to Arguments

Applicant argues that Chang et al. do not teach a plurality of conductive plugs arranged along the first conductive line, to electrically connect the second metal line. Chang et al. teach a plurality of conductive plugs a' (see figure 8) arranged along, that is, in a line parallel with the length or direction of, the first conductive line 214. Said plugs are electrically connected to the second metal line.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ori Nadav whose telephone number is 571-272-1660. The examiner can normally be reached between the hours of 7 AM to 4 PM (Eastern Standard Time) Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



O.N.
7/2/07

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